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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/813,454	03/20/2001	Sigurd Wagner	A0770/7037 GSE	3276
23483	7590	01/13/2004	EXAMINER	
HALE AND DORR, LLP 60 STATE STREET BOSTON, MA 02109			TRAN, MINH LOAN	
			ART UNIT	PAPER NUMBER

2826

DATE MAILED: 01/13/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

### Office Action Summary

**Application No.**

09/813,454

**Applicant(s)**

WAGNER ET AL.

**Examiner**

Minhloan T. Tran

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 29 October 2003.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-63 is/are pending in the application.
- 4a) Of the above claim(s) 9-18, 25-33 and 39-42 is/are withdrawn from consideration.
- 5) ☒ Claim(s) 19-24 is/are allowed.
- 6) ☒ Claim(s) 1-3, 6-8, 34-38, 43-46, 50, 52-57 and 59-63 is/are rejected.
- 7) ☒ Claim(s) 4, 5, 47-49, 51, 58 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 20 March 2001 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. §§ 119 and 120**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All   b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 13) ☒ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.
- a) ☐ The translation of the foreign language provisional application has been received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)                      4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)                      5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 3/02, 1/02                      6) ☐ Other: \_\_\_\_\_

**DETAILED ACTION**

***Election/Restrictions***

1. Applicant's election of Group I, claims 1-8, 19-24, 34-38, 43-63 in Paper No. 10/29/2003 is acknowledged. Because applicant did not distinctly and specifically point out the supposed errors in the restriction requirement, the election has been treated as an election without traverse (MPEP § 818.03(a)).

***Information Disclosure Statement***

2. The information disclosure statements filed 03/07/2002 and 01/16/2002 have been considered.

***Oath/Declaration***

3. The oath or declaration filed on 07/30/2002 is acceptable.

***Drawings***

4. The informal drawings filed on 03/20/2001 are not of sufficient quality to permit examination because the lines, numbers and letters are not well defined and clean. Accordingly, new drawings are required in reply to this Office action.

***Claim Objections***

5. Claim 60 is objected to under 37 CFR 1.75(c), as being of improper dependent form for failing to further limit the subject matter of a previous claim 59. Applicant is

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required to cancel the claim(s), or amend the claim(s) to place the claim(s) in proper dependent form, or rewrite the claim(s) in independent form.

6. Claim 50 is objected to because of the following informalities:

In claim 50, line 1, "the" after "wherein" should be deleted.

Appropriate correction is required.

***Claim Rejections - 35 USC § 112***

7. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 50, 54 and 55 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

In claim 50, lines 1-3, what does applicant mean by a region contacted by at least one of the first and second transparent conductors defines a limited area less than all of the PIN diode ?

In claim 54, lines 2 and 3, "interposing a transparent photodetector in the optical beam between a light source and a light receiver" is unclear as to the photodetector is a light receiver. How can the photodetector be interposed between the light source and it self ?

***Claim Rejections - 35 USC § 102***

8. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

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A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 1-3, 6-8, 34, 37, 38 are rejected under 35 U.S.C. 102(b) as being anticipated by Huang et al. (WO 89/03593).

Figures 1 and 2 of Huang et al. disclose a semitransparent optical detector comprising a semitransparent PIN diode 20 having at least one microcrystalline silicon layer 22 and at least one of an amorphous silicon layer (21,23) being formed on a transparent glass substrate 14; an ITO transparent conductor layer 24 disposed on a surface of the PIN diode 20; a tin oxide thin film conductor 13 being disposed between the PIN diode 20 and the substrate 14. It is inherent that the conductor layer 13 is transparent to light because it is a thin film and made of tin oxide.

Claims 43-46, 52, 53, 61-63 are rejected under 35 U.S.C. 102(b) as being anticipated by Vijan et al. (4,680,085).

With regard to claim 43, 44, 52, 53, 61-63, Figures 4 and 7 of Vijan et al. disclose a semitransparent optical detector comprising a thin film PIN diode (16,18,20), a first transparent conductor 22 at least partially covering and contacting a first surface of the PIN diode (16,18,20); a second transparent conductor (12,14) at least partially covering

and contacting a second surface of the PIN diode (16,18,20) and a SiO<sub>2</sub> or silicon nitride passivation layer 28 covering and enclosing all the edges of the PIN diode (16,18,20), defining an aperture on one surface thereof, and exposing a part of the second transparent conductor (12,14) for contact thereto.

With regard to claims 45, 46, figures 6 and 7 of Vijan et al. show a pattern metal layer 32 over the passivation layer 28, including a first conductor 34 entering the aperture to contact the first transparent conductor 22 and a second conductor 36 contacting the second transparent conductor (12,14) through a hole defined in the passivation layer 28.

Claims 59 and 60 are rejected under 35 U.S.C. 102(b) as being anticipated by Schaumburg (EP-125,390).

Figure 10 of Schaumburg shows a connection system for a semitransparent optical detector comprising a bottom conductor 36 which, in plan view, substantially surrounds a top conductor 35; the top conductor 35 which surrounds an aperture 40 and defines a hole therethrough aligned with the aperture 40; the bottom conductor 36 which surrounds the aperture 40 and defines a hole therethrough aligned with the aperture 40.

Claims 56, 61, 62 is rejected under 35 U.S.C. 102(e) as being anticipated by Mei et al. (6,300,648).

Figure 8 of Mei et al. shows a semitransparent optical detector comprising a first conductive layer 14, a thin film PIN diode (22,12,24) having a first edge partially

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overlying the first conductive layer 14; a passivation layer 18 covering and enclosing all the edges of the PIN diode (22,12,24) and defining an aperture on a surface of the PIN diode (22,12,24); a second transparent conductive layer 16 contacting the surface of the PIN diode (22,12,24) through the aperture.

### ***Claim Rejections - 35 USC § 103***

9. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 35 and 36 are rejected under 35 U.S.C. 103(a) as being unpatentable over Huang et al. (WO 89/03593).

Figures 1 and 2 of Huang et al. disclose the transparent thin film conductor 24 is made of ITO and the transparent thin film conductor 13 is TO, but figures 1 and 2 of Huang et al. do not disclose the transparent thin film conductor is ZnO or SnO.

However, although Huang et al. do not teach exact the material of the transparent conductor film as that claimed by Applicant, the material differences are considered obvious design choices and are not patentable unless unobvious or unexpected results are obtained from these changes. It appears that these changes produce no functional differences and therefore would have been obvious. Note *In re Leshin*, 125 USPQ 416, *In re Woodruff*, 919 F.2d 1575, 1578, 16 USPQ2d 1934, 1936 (Fed. Circ. 1990).

Claim 57 is rejected under 35 U.S.C. 103(a) as being unpatentable over Mei et al. (6,300,648).

Figure 8 of Mei et al. shows all the subject matter claimed except for a third conductive layer contacting the second transparent conductive layer outside the aperture. However, it would have been obvious to one of ordinary skill in the art to form a third conductive layer contacting the second transparent conductive layer of the Mei et al.'s device outside the aperture in order to electronically connect the photodetector to another semiconductor element.

#### ***Allowable Subject Matter***

10. Claims 4, 5, 47-49, 51, 58 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

11. Claims 19-24 are allowable over the references of record because none of these references disclose or can be combined to yield the claimed invention such as a PIN diode having amorphous silicon P and N layers and an intrinsic I layer of an alloy of silicon and germanium as recited in claim 19.

#### ***Conclusion***

12. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Minhloan T. Tran whose telephone number is (703) 308-4919. The examiner can normally be reached on Monday-Friday 9:00 AM-5:30 PM.

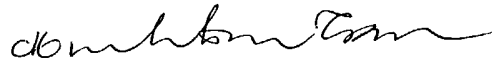


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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nathan J. Flynn can be reached on (703) 308-6601. The fax phone number for the organization where this application or proceeding is assigned is (703) 308-7382.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.

Mlt  
1/04



Minhloan T. Tran  
Primary Examiner  
Art Unit 2826